KUNGL. SVENSKA VETENSKAPSAKADEMIENS HANDLINGAR. Band 52. N:o 9.

RESULTS

OF

DR. E. MJÖBERGS

SWEDISH SCIENTIFIC EXPEDITIONS

TO

AUSTRALIA 1910—1913

IX.

BATRACHIANS FROM QUEENSLAND

BY

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WITH ONE PLATE

COMMUNICATED JANUARY 12TH 1916 BY HJ. THÉEL AND E. LÖNNBERG

STOCKHOLM
ALMQVIST & WIKSELLS BOKTRYCKERI-A.-B.
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A collection of *Batrachians*, brought home by Dr. Erik Mjöberg from his second scientific expedition to Australia (Northern Queensland) has been acquired by the R. Museum of Natural History, Stockholm, and it has kindly been delivered to me for determination by the keeper of the vertebrate department of this museum, Professor E. Lönnberg. As this expedition mainly had for object an exploration of the fauna of the terrestrial invertebrates of the rain-forests of Queensland, it was not to be expected, that the collection of Batrachians should be very large; it contains, however, 22 species, represented by 68 specimens, and it is very interesting all the same. As far as I can see, no less than six species are undescribed, viz. three *Hylae*, one *Pseudophryne*, one *Crinia*, and one *Phrynixalus*, the latter being the second genus of the family *Engystomatidae*, hitherto found in Australia. The first genus of this family, recorded from the Australien continent, *Austrochaperina* Fry 1912, is represented as well and by several specimens. In the whole the collection illustrates distinctly the great resemblance that exists between the northern part of Queensland and New Guinea regarding the fauna of the batrachians.

Of the localities mentioned the following fall within the limits of the rain-forests: Mount Tambourine in Southern Queensland, and Malanda, Carrington, Atherton, Millaa-Millaa, Cedar Creek and Tully River, all situated on the large Atherton-Herberton tableland in Northern Queensland. The following are from the open forest-country: Colosseum in Southern Queensland, Chillagoe, not far from Cairns district, and Alice River in the interior of Cape York Peninsula.

Phrynixalus reginae n. sp.

(Figs. 1 a—d.)

Eleven specimens, Figures 1 a—d; ten from Malanda in the jungles, February 1913, one from Cedar Creek, April 1913.

Snout short, distinctly shorter than the orbital diameter, truncate or slightly rounded; canthus rostralis rounded. Loreal region high, straight, not concave; nostrils at the tip of the snout. Interorbital space broader than the upper eyelid. Eye large, with longitudinally rounded pupil. Tympanum hidden or slightly distinct, smaller than half the diameter of the eye. Tongue large, long, and oval, its posterior half free, rounded behind, or very sligthly nicked. Vomerine teeth none. No transverse ridges behind the choanae, which are small and placed just in front. A broad median groove in the palate between the rather much distended lateral parts; posteriorly this groove is limited by a distinct, arched transverse ridge, which is divided by two notches into a mesial and two lateral parts, the former corresponding to the groove, the latter to the distended lateral parts of the palate. Behind this anterior smooth ridge there is a posterior one, crossing the palate in front of the oesophagus, very distinct and serrated; in the specimen figured the teeth of this ridge are eleven in number. Fingers rather long, perfectly free; the 1st small, extending only to the middle of the 2nd; the 2nd, 3th, and 4th with large triangular disks, more than twice as broad as the phalanges; the disk of the first finger small, slightly broader than the basal part. Toes free, short; their disks considerably smaller than those of the fingers, not twice as broad as the phalanges; the disks of the 1st and 5th toes small, sometimes hardly distinguishable. Third toe longer than fifth. A small oval inner metatarsal tubercle, no outer; subarticular tubercles large and prominent on the toes as well as on the fingers. If the length of the tibia is marked off from the knee forwards along the body, it reaches the hind margin of the tympanum or the eye. Skin smooth on the upper side; under the magnifying glass, however, it appears to be finely chagreened; the posterior part of the belly more on less granulate.

No omosternum, no præcoracoid; coracoid well developed, dilated at the end which is connected with sternum; sternum a heartshaped cartilaginous plate. Terminal phalanges of fingers and toes short and thick, indistinctly T-shaped.

The colour is very variable: The smallest specimen (13 mm) is uniform black, except the tips of the disks which are light, and the under parts of the thighs which are marbled with light. Another, somewhat larger specimen (22 mm, fig. 1 a) which also has retained its juvenile colour pretty well, has the upper parts almost uniform

darkbrown; only between the eyes an indistinct blackish cross-bar is to be seen and behind this, on the anterior part of the back, a rather undefined black marking. On the posterior part of the back, behind the diaphyses of the sacral vertebra, there is on both sides a small white crescentic spot, limited behind by a black longitudinal spot. The sides of the body are darkbrown as well, but lighter than the back, with the exception of two short black bands, the one above the tympanum, the other above the shoulder; under surfaces of this specimen are chestnut brown and densely and minutely dotted with light. In the next phase of colour-variation the upper side is rather light as well, showing the same brown ground colour as the sides. The dark colour is, however, still retained in a broad dark band between the eyes, limited with light in front, in a W-shaped large spot on the anterior part of the back and in some irregular longitudinal lines, more or less broken up into spots. The white lumbar spots as in the specimen lately described but larger and red in the middle; the dark bands of the sides distinct. Rather near to this specimen comes another with the lighter ground colour on all the upper parts densely dotted and marbled with black; the longitudinal dorsal bands are broken up into spots, but the bands on the sides, the transverse one between the eyes, and the W-shaped spot are still retained as well as the lumbar black and white markings. The specimen, represented by the figure b, is rather similar to this one, except in having the black spots on the back partly obsolete; by this the last mentioned specimen resembles the prevailing colour-variation, which may be described as follows: The ground colour brownish grey, a broad dark band between the eyes, sharply limited in front by the light grey colour of the snout; the posterior margin of this band is uneven and rather indistinct; on the anterior part of the back a more or less distinct W-shaped dark spot, and on the loins a crescentic white spot, in front and behind margined with black; some dark spots may be scattered on the back. The colour of the sides resembles that of the back; a black streak above the tympanum, interrupted above the axil, extends to the middle of the side.

The specimen, represented by fig. 1 c, has a colour pattern in many points dissimilar to those described above, which all of them distinctly resemble each other. On the back of this specimen there is a large red space from the anterior level of the eyes to the vent, occupying the interorbital space, the eyelids, and the whole nuchal region to the shoulder, where it narrows to a broad mesial band, broadly margined with black. The specimen figured has traces of the white lumbar spots, which, however, are quite absent in another similarly coloured, but more brightly red specimen. In all specimens, except the blackish young one and the spotted specimen mentioned above, the limbs are uniform brownish grey; in the latter also the limbs are dotted with black. Generally, the under surfaces are uniform yellowish white or yellowish red, but the dark specimens are dirty chocolate brownish below, densely and minutely dotted with light. In some of these dark specimens the chin is darker than the remaining under parts.

Measurements of the largest specimen:

Length between tip of snout and vent 25 mm.
Breadth of head 8 mm.
Diameter of eye 3,2 mm.
Length of nose 2,8 mm.
Diameter of tympanum 1,5 mm.
Length of fore limb 14,6 mm.
» of femur 10 mm.
» of tibia 9,7 mm.
» of tarsus with 4th toe 14,2 mm.
Diameter of disk on the 3d finger 1,8 mm.
» » » » 4th toe 1,2 mm.

My specimens do not appear to differ in any high degree from the two other species of this genus, hitherto described, *Phr. montanus* BOETTGER from Halmahera, and *Phr. biroi* MEHELY from New Guinea.[1] With regard to the colour they correspond rather well with *Ph. montanus*, which, however, appears to lack the characteristic white lumbar spot and the black lateral band; the colour of *Ph. biroi* is described and figured as quite dissimilar to that of my specimens. The limbs are longer in both species mentioned, the tibio-tarsal articulation reaching the front margin of the eye or beyond; in my specimens it hardly reaches the eye. In two specimens of *Ph. montanus*, the one only 1 mm., the other only $^1/_2$ mm. larger than my specimen measured, the fore limbs are, according to a statement of BOETTGER, 17 mm. (14,6 in my specimen), the hind limbs are 39,4 and 42 mm. (in stead of 33,9) and the tibia 13,5 and 13 (instead of 9,7). In a specimen of *Ph. biroi*, measured by MEHELY, the hind limbs are 155 % of the length of head and body; in my specimen they are only 136 % of the same length. The tongue appears to be of the same shape in my specimens as in *Ph. biroi* (»lang oval») but differs from that of *Ph. montanus*, in which it is »breit oval, nur in ihrem vorderen Drittel festgewachsen». The structure of the posterior part of palate of my specimens appears to be rather similar to that of the species mentioned, but the slightly arched transverse ridges on the anterior part of the palate behind the choanæ, described in *Ph. montanus* as well as in *Ph. biroi*, are not to be discerned. If the skin is removed, they are, however, well distinguishable and of the same shape as figured on the skeleton of the head of *Ph. biroi*. In MEHELY's diagnosis of the genus *Phrynixalus* he states, »Umriss des Trommelfells deutlich hervortretend», a characteristic which does not agree with my specimens, in which generally the tympanum is hidden or very sligthly visible. At last the habitat of the specimens now in question is the Australian continent, while, as mentioned, *Ph. montanus* is found in Halmahera and *Ph. biroi* in New Guinea,

[1] *Zool. Anz.* 1895 p. 133; *Termes. Fuzetek*, Budapest 1901 p. 247.

Austrochaperina robusta FRY in *Rec. Austr. Mus.*, Vol. 9, Sidney 1912, p. 89. — Four specimens from Malanda »in the jungles» 1913, three specimens from Carrington 1913, and one from Millaa-Millaa »in the jungles» 1913.

Before now this species has been found in North-eastern Queensland at Russel River and Bloofield River, and seems thus to be rather common in the tropical rain forests on the Cape York Peninsula.

In most respects the specimens, brought home by Dr. MJÖBERG, correspond well with FRY's description and figures, and I do not hesitate to refer them to this species. They differ, however, in the following points: Between the eyes and the nostril there is a distinct groove; a well marked fold extends from the hind margin of the eye to the shoulder above the tympanum, which is more or less distinct. In none of the specimens the tibio-tarsal articulation does reach the eye, but even in one of the type specimens the hind limbs are said to be shorter than in the other, in which the tibio-tarsal articulation reaches the eye. The 5th toe of all my specimens is considerably narrower than the others, narrower than shown in FRY's figure. The tongue is not »subcircular», a difference, however, of small value, because the tongue, as FRY also remarks, varies considerably in specimens, preserved in spirit. In the largest of my specimens the tongue is long and elliptical, in others broad. FRY's figures show two distinct anterior palatine folds, which in my specimens are rather indistinct, a condition which is in accordance whith FRY's statement in the text, that they are »hardly distinguishable». Most of my specimens are uniform dark brown above — some more brown, some more black —, but all lack the light line, stated by FRY to be present in his uniformly coloured specimens. Two of the specimens from Carrington are light brownish, densely dotted with dark, apparently coming near to FRY's varietas B; the dots are, however, considerably smaller and more densely placed than in FRY's figure. In the same collection a third specimen of the same size is uniform darkbrown; thus, the varieties, recorded by FRY, are possibly to be considered more as individual variations than as distinct forms.

Mixophyes fasciolatus GÜNTHER. — Two specimens from Malanda, N. Queensland, Febr. 1913; 85 and 61 mm. between snout and vent.

The two specimens differ slightly in some points from GÜNTHER's and KEFERSTEIN's descriptions (Proc. Zool. Soc., 1864, p. 46, Arch. f. Naturgesch., 1868, p. 255). The skin is not »perfectly smooth», all upper parts being provided with small densely set prickles; the feet are fully 3/4 webbed; on the outer side only two joints of the 4th toe are free from the web; if the hind limb is stretched forward, the tibio-tarsal articulation reaches a good deal beyond the tip of the snout. A dark angular spot is situated between the eyes, prolonged backwards as a broad band along the mesial line of the back. Under parts of foot and tarsus are chocolate-brown; the line of demarcation of this colour is on the outer side of the tarsus beautifully serrated. The lower and the concealed parts of the tibia and the thighs are in the smaller specimen marbled with chocolate-brown and white; in the larger this beautiful pat-

tern is represented only by a row of large, dark, black-edged spots on the anterior margin of the tibia. The fore limb shows a similar arrangement of the colours.

I have only seen this species recorded from the northern parts of New South Wales, Clarence River. By this it is stated to live in the northern parts of Queensland as well, and very probably it is to be found also in the intermediate parts of this large province.

Limnodynastes dorsalis GRAY. — One specimen from Atherton 1913, 49 mm between snout and vent.

Limnodynastes ornatus GRAY. — One specimen from Cedar Creek, April 1913; 34 mm between snout and vent.

A large, light, black-edged, trapezoidal spot behind the eyes; back and sides almost uniform dark olive brown without the dark bands and spots which ornate the specimens collected by Dr. MJÖBERG in Western Australia. The toes are webbed at the base only.

Crinia acutirostris n. sp.

(Fig. 2.)

Two specimens from Malanda; caught in the jungles.

Vomerine teeth none, tongue elongate, narrow, nicked behind, snout acute, flattened and prominent, considerably longer than the diameter of the orbit; canthus rostralis sharp, loreal region straight, not concave. Nostril equally distant from the eye and the tip of the snout. Interorbital space somewhat broader than the upper eyelid; tympanum more or less indistinct, the tips of the fingers rounded, not pointed; first finger half the length of the second. Toes not webbed, but broadly fringed, the tips slightly dilated. Subarticular tubercles moderate, a small inner, no outer metatarsal tubercle. One of the specimens has a distinct, serrated tarsal fold, which, however, is nearly entirely absent in the other. If the length of the tibia is marked off from the knee forwards along the body, it reaches the anterior margin of the eye, or almost the nostril. A narrow, but very distinct glandular fold, running from the eye nearly to the groin, separates the back from the sides of the body. The skin is rather dissimilar in the two specimens, the one being rather smooth, the other more rough and spiny. In the latter the upper surfaces are finely granulate and provided with small pointed tubercles, some of which are larger and more prominent than the others. Of the most prominent ones some form an oblique row on each side of the vent, three are arranged in a triangle on the posterior part of the back, and finally a pair sits on the back behind the eyes. In this specimen also the upper parts of the hind limbs are densely prickled, the small points forming some rather

distinct oblique folds on the thighs and tibiæ; the under surfaces are quite smooth. In the other specimen, which is figured on the plate, the upper surfaces are finely chagreened, but there are no pointed tubercles, except the three on the posterior part of the back; the hind limbs are in this specimen quite smooth with exception of some small prickles on the posterior edge of the tibia and tarsus. In both specimens the heel is provided with a dermal, more or less spurlike, appendage.

The colour is rather dissimilar in the specimens. The figured smoother specimen is much lighter than the prickled one. In the former the back is greyish brown, considerably darker on the posterior parts; upper surface of snout light grey, a rather indistinct dark cross-band between the eyes, a black triangular spot on the anterior part of the back and three small spots on its posterior part; the latter ones are placed round the three tubercles; in the same way a foremost pair of tubercles is slightly indicated in the anterior triangular spot. The edge of the glandular fold is light, very distinctly limiting the back from the anterior parts of the sides, which are jet black as well as the sides of the head. The groin and adjoining parts of the thigh are whitish, upper sides of femur and tibia blackish brown, indistinctly barred with black; upper surfaces of feet and fore limbs light; belly and other under parts reddish white with small dark dots on the chin and breast; under surfaces of feet blackish brown with exception of those of the three inner toes which are light. About the colour of this specimen, when alive, Dr. MJÖBERG has stated: »Greenish yellow above with four black spots; viz. a large triangular in front and three placed in a triangel on the posterior part of the back; below reddish yellow; the sides of the body black.» The other specimen is uniform dark-coloured above; only the fore limbs are light; the sides are black with exception of the groin which is light yellowish in this specimen as well. Chin and breast blackish brown; belly and under surfaces of fore limbs, of thighs, and of tibiæ light with dark dots; feet dark below, inner parts light above.

The dark, smaller, and spiny specimen is a male with a subgular vocal sac, which opens by two longitudinal slits on the sides of the tongue in the same manner as in *Crinia signifera*. The light and smooth specimen is a female. Whether the differences recorded are to be considered as sexual or not, can not be decided by these two specimens; possibly the more spiny skin is a characteristic, belonging to the male, the dark colour, however, is probably the colour of the young.

Measurements.

Length between tip of snout and vent	23 mm.	30 mm.
Breadth of head	7,6 »	9 »
Distance between tip of snout and angle of mouth	8,2 »	9,4 »
Length of snout	4,6 »	5,3 »
Diameter of eye	3,2 »	4 »
Length of humerus	4,6 »	6,1 »

From elbow to the tip of the longest finger	9,5 mm.	11,6 mm.
Length of femur	10,5 »	11,5 »
» of tibia	12 »	14,3 »
» of tarsus with 4th toe	17,6 »	20,6 »

This new species is very well distinguished from other species of the genus *Crinia* by its long and prominent nose, the distinct glandular folds, the very short first finger, the colour etc.

Phanerotis fletcheri Blgr.

(Figs. 3 a—c.)

One young specimen, 20 mm. between snout and vent. Mount Tambourine, Southern Queensland, October 1912.

In *Jahrb. Nass. Ver. Wiesbaden*, 1913, p. 75, I have recorded from New Guinea another specimen, only with great hesitation referred by me to this species, as appeared to differ in several points from Boulenger's description (Proc. Linn. Soc. N. South Wales (2) 5, 1890, p. 594). Museumkustos Ed. Lampe, Wiesbaden, has kindly permitted me to borrow and reexamine this species. It is evidently of the same kind as the specimen now in question, which shows the same differences from Boulenger's description, and I am still rather uncertain, whether they are to be referred to *Ph. fletcheri*, or whether they represent a new species. I have preferred, however, to maintain my first opinion, as they in many points, and often in the smallest details, appear to correspond with the typical specimen. Further examinations of a richer material may settle this question, and for that purpose the specimen from New Guinea has been figured.

The most important of the differences between my specimens and that of Boulenger appeared to be the different development of the omosternum, but I have perhaps been mistaken about the importance of this characteristic. According to the description, the type-specimen of *Phanerotis fletcheri* has the omosternum »very small, cartilaginous», principally corresponding with that in *Cryptotis*, in which genus it shall be »rudimentary». In both specimens, examined by me, the omosternum is a long narrow style, shown in fig. 3 b, certainly cartilaginous, but well developed and in no case »very small or rudimentary». An examination of the sternal apparatus in *Cryptotis brevis* proved, however, that the omosternum in this genus may be variable, and that it seems impossible to attach a generic or even specific importance to this characteristic. Already in a specimen of medium size I found a firm median string as a continuation forwards of the sternum, and in a rather large specimen (39 mm. between snout and vent) this string appeared as a distinct cartilaginous

style of the same shape as the omosternum figured, not at all »rudimentary». If it thus can vary so highly in *Cryptotis*, it may vary in the closely allied *Phanerotis* as well.

Another difference is displayed in the shape of the tongue, which is oval in the type of *Phanerotis*, but broadly triangular in my specimens (fig. 3 c). The shape of the tongue, however, is generally no important character, and the difference may possibly depend upon individual variation, or it is caused by a different state of preservation of the animals. Of no importance are also the small differences in length of the hind limbs and breadth of the interorbital space. More difficult to understand is the quite different colourpattern of the foot. Regarding the type specimen BOULENGER says: »Tarsus and outer toe bordered with black», which appears to signify, that the remaining parts of the foot are light. In my specimens we find the opposite to be the case; the under surfaces of the tarsus and foot are chocolate brown, but the outer sides of the tarsus and of the outer toe are greyish white.

In other respects BOULENGER's description of the colour corresponds very well with the colour of my specimens. »Hinder sides of thighs blackish brown; a black band borders the postocular fold inferiorly, its lower border sinous and involving the upper third of the tympanum; a few rosy spots below the eye and behind the axilla; a cross bar between the eyes and the interscapular chevronfold blackish» etc. In the type specimen, however, »the sides of head and axillary region are black»; of this there are only faint traces in the specimen figured. The dark colour is a juvenile characteristic, which has almost entirely disappeared in this large specimen, but it is partly retained in BOULENGER's somewhat smaller specimen and wholly in the small specimen from Queensland, which has the sides black from the tip of the snout to behind the axil.

The small round dark spots behind the axil are not »rosy» in my specimens. FLETCHER, however, mentions specimens of *Phanerotis* from New South Wales which lack such rosy spots as well as the light median band, stated by BOULENGER.

The skin of the type-specimen is granular on the upper sides and provided with »a small ∧-shaped glandular fold between the shoulder, and an oblique fold from the eye to the middle of the sides passing above the tympanum». The latter fold is very distinct in both my specimens, and in the specimen figured there are traces of the former as well in the shape of two short folds in the dark postocular dorsal spots. In the small specimen the skin of the whole upper side is prickled by small spiny porous warts, forming some short longitudinal folds on the back. In the large specimen as well there are traces of such spines here and there and especially on the upper eyelids, which in this manner become »warty». The under surfaces are, as in the type specimen, quite smooth and uniform »whitish with exception of the tibia (in my specimens also of the tarsus and foot) which is brown». A light band, bordering the black, runs from the knee along the outer margin of the tibia, tarsus and 5th toe.

Measurements.

Total length	37 mm.	21 mm.
Breadth of head	14,8 »	7,5 »
Length of snout	6 »	4 »
Diameter of eye	4,8 »	3,6 »
» of tympanum	3,7 »	2 »
Distance from tip of snout to hind margin of tympanum	14 »	8 »
Length of humerus	9 »	4,2 »
From elbow to tip of 3d finger	19 »	10 »
Length of femur	19,5 »	11,2 »
» of tibia	21,1 »	11,7 »
» of tarsus with 4th toe	26,2 »	15,1 »

If the specimen from German New Guinea (Bogadjim at Stephansort) really was to be referred to *Ph. fletcheri*, which species up to that time had been found only in New South Wales, it was to be expected that it should live in Queensland as well. It was therefore very interesting to find this specimen in Dr. MJÖBERG's collections, by which the probability of the correctness of my first determination was confirmed.

Chiroleptes inermis PETERS. — Four specimens, N. Queensland: two from dark caves at Chillagoe 3/8 1913, 35 and 25 mm., two from Alice River Sept. 1913, 25 and 24 mm.

Pseudophryne australis GRAY forma **bibronii** GÜNTHER. — Three specimens from Mount Tambourine, Southern Queensland, Okt. 1912.

The great variation in colour, characterizing this species, is distinctly shown already by these three specimens, which all are differently coloured, although they are of about the same size (20—23 mm.). The one is uniform brownish grey with two reddish yellow longitudinal dorso-lateral bands fading into the colour of the back but very distinctly limited from the black sides. In another the back is light brick-red with two pairs of black lines, viz. two short lines from the margin of the eyelid to the nuchal region, converging behind, and behind these two longitudinal lines on the sides of the back, extending to the vent; especially the hind parts of these lines are broken up into spots; the sides of the body are grey, dotted with black. The upper surface of the head in front of the anterior pair of dark lines is uniform brownish yellow, lighter than the back. The third specimen has a similar colour-pattern, but being much darker, it has the black lines rather indistinct. The under surfaces of all three specimens are marbled with black and yellowish white as usually in this species.

In a paper on Batrachians in *Results of Dr. E. Mjöbergs Swedish scientific Expeditions to Australia* (K. Sv. Vet. Ak. Handl., Bd. 52, N:o 4) I have expressed my doubts regarding the correctness of the specifical distinction of *Ps. bibronii* GÜNTHER and *Ps. australis* GRAY, doubts already expressed by BOULENGER in his catalogue, though the correctness of these has not been admitted by the Australian authors. By the great kindness of Mr J. J. FLETCHER I have received a typical specimen of *Ps. australis*, which I compared with specimens of *Ps. bibronii* from different localities. This comparison has not convinced myself, that I was mistaken; on the contrary it has confirmed me in my opinion, as I am not able to find any differences between the two »species», except some slight ones with regard to the colour. Generally the colour varies in a high degree in most species of batrachians and can not be used as the chief difference between two species, especially when the differences are so small as in the two forms in question. The streak along the coccyx is very distinct in the specimen received as *Ps. australis*, but it may be found in *Ps. bibronii* as well (see my figure 3 in the paper quoted). A distinct white spot is to be seen both on the anterior and posterior sides of the thighs in *Ps. australis* as well as in the specimen of *Ps. bibronii*, just mentioned. The spot on the humerus is also of the same shape in both specimens. The light colour of the head is the only difference I can find between this typical specimen of *Ps. australis* and the specimen of *Ps. bibronii*, figured by me, but, as my figure 4 (in the paper quoted) shows, even this colour-pattern does not belong to *Ps. australis* alone, which is said to live only in the surroundings of Sidney.

As GRAY's name is the older, this species ought, according to my opinion, to be named *Pseudophryne australis* with forma *bibronii* as the most common colour-variety.

Pseudophryne rugosa n. sp.

Fig. 4.

One specimen from Colosseum, Southern Queensland; November 1912.

My astonishment was great, when I found in these collections from Queensland a specimen of the genus *Pseudophryne*, which much resembles the two specimens from Noonkambah in the interior of N. W. Australia, which Dr. MJÖBERG brought home from his first Australian expedition, and which I have described as *Ps. mjöbergii* in *Results of this expedition;* (K. Vet. Akad. Handl., Band 52, N:o 4, p. 19). In fact the resemblance is so great that I have hesitated, whether I should describe it as a variety of *Ps. mjöbergii.*

Snout subacuminate, shorter than the orbital diameter; nostril much nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid. Tongue oval, entire, and free behind; no vomerine teeth. Fingers free, rather short,

obtusely pointed, first shorter than second, two very distinct metacarpal tubercles and projecting subarticular pads. Toes short, obtusely pointed, with a slight rudiment of web at the base, not fringed, but provided with a very narrow ridge along the sides. Two large metatarsal tubercles, broad and blunt, not compressed; no tarsal tubercle. If the length of the tibia is marked off from the knee forwards along the body, it reaches the anterior part of the axilla, and if the hind limb is stretched forwards, the tip of the fourth toe reaches the tip of the snout. Back warty; the hind part of the belly indistinctly, the under surface of the thighs distinctly, granulate. Three large porous and rugose glands on the sides of the body, viz. a large anterior one from the eye to behind the shoulder, another somewhat still larger immediately behind the first, extending to the groin, and a small one on each side of the coccyx. No glands on the thighs. The upper side of the vent is distended as a vault, the free margin of which is deeply serrated forming a dermal fringe above the vent.

Upper surfaces dark brownish with rather indistinct black markings, viz. an angular band between the eyes, two longitudinal bands on the back at the inner margins of the glands, and irregular spots on the hind part of the back; a large yellowish white spot in the groin, a small white spot at the angle of the mouth and a few very small light dots on the glands; brownish grey below, lighter below than above.

Measurements.

Total length 23 mm.
Length of snout 2,7 mm.
Diameter of orbit 3,6 mm.
Length of humerus 3.6 mm.
» of fore limb from elbow to tip of 3^{d} finger 9,2 mm.
» of femur 6,7 mm.
» tibia 7 mm.
» tarsus with 4th toe 12,2 mm.

The most important differences between *Ps. mjöbergii* and this specimen is, that the latter lacks a tarsal tubercle, and has shorter hind limbs (in *Ps. mjöbergii* the tip of the fourth toe reaches a good deel beyond the snout). Besides, the colour is much darker, the upper surfaces more warty, and the arrangement of the large swellings more regular; in addition to this the habitat is quite different. Even *Ps. mjöbergii* has, however, more or less distinctly the peculiar structure of the vent, described above (in one of the two type-specimens the upper margin of the vent is entire, but in the other it is serrated, although not at all so distinctly as in the specimen now in question. In the main the colour-pattern and the external appearence are rather similar as well, and I believe, that it is very possible, that a further

examination of a richer material for comparison shall prove, that the two forms are not to be distinguished as different species.

Hyla gracilenta PETERS. — One specimen from Malanda, Febr. 1913 (56 mm.), two specimens from Carrington, May 1913 (18 and 42 mm.), and two from Atherton 1913 (54, 57 mm).

None of the specimens is provided with »a white line on canthus rostralis, outer border of upper eyelid, and above the tympanum», but I do not hesitate to refer them to this beautiful species.

Hyla cærulea WHITE. — One specimen (88 mm.) from »Queensland», two specimens (82 and 76 mm.) from Carrington, May 1913.

Hyla peronii TSCHUDI. — One specimen from a small brook, Cape York Peninsula, Aug. 1913. 35 mm. between tip of snout and vent.

Hyla rubella GRAY. — One specimen from Mount Tambourine, Okt. 1912 (36 mm.), and one from Malanda in the jungles 1913 (17 mm). The small specimen is beautifully purple on all parts visible from above; colourless below.

Hyla citropus TSCHUDI. — A small specimen from Cedar Creek, April 1913 (17 mm. between snout and vent).

Although the specimen is rather young, I believe, that I can refer it with rather great certainty to this species. It corresponds very well with BOULENGER's description in *Cat. Batr. Sal.*, p. 408, and with KEFERSTEIN's figure in *Arch. Naturg.* 1868, Tab. VII, fig. 22. The colour in spirit is greyish blue without any purplish, which, however, may be a juvenile character. The broad irregular black lateral band is very distinct, but without any light edge above. As far as I know, this species has not been recorded from Queensland before this, only from New South Wales.

Hyla lesueurii DUM. & BIBR. — Two specimens from Atherton, Jan. 1913 (37 and 64 mm.), one specimen from Malanda, Febr. 1913 (59 mm.).

Hyla nigrofrenata GÜNTHER. — Two specimens from Cape York, Sept. 1913 (25 mm. between snout and vent).

Hysa nasuta GRAY. — One specimen from Mount Tambourine, Okt. 1912 (36 mm.), another from Cape York, Alice River, Sept. 1913 (34 mm.).

Hyla nannotis n. sp.

(Figs. 5 a—e.)

Tongue semicircular, slightly nicked behind. Vomerine teeth in two transverse groups on a level with the hind edges of the choanæ. Snout short, rounded, slightly prominent, a little shorter than the orbit; nostril near the end of the snout; canthus rostralis rounded, loreal region oblique and concave. Interorbital space somewhat broader than the upper eyelid. Tympanum very small, about the fourth the diameter of the orbit, its upper margin not distinct. Fingers rather long and slender, webbed at the base, a distinct rudiment of pollex; toes nearly entirely webbed; disks of fingers larger than disks of toes, which are a little larger than the tympanum. A tarsal fold; no outer metatarsal tubercle, inner very distinct, long and oval. If the length of the tibia is marked off from the knee forwards along the body, it reaches beyond the snout. Skin very finely granulate or prickled above, and provided with small, sparsely scattered tubercles on the head and back. Coarsely granular below and on the sides of the body; a distinct fold above the tympanum. Dark olive grey or brownish above, closely and irregularly speckled with blackish; the lower surfaces of the limbs and of the hind part of the belly reddish brown, remaining lower parts brownish grey, the chin spotted with black.

A male specimen from Tully River, N. Queensland, April 1913.

Measurements.

Total length 45 mm.
Breadth of head 16 mm.
Length of head (from the hind margin of tympanum) 15,4 mm.
» of snout 6,2 mm.
Diameter of eye 6,8 »
» of tympanum 1,6 mm.
Length of humerus 9,5 mm.
From elbow to tip of 3^{d} finger 22 mm.
Length of femur 25,8 mm.
» of tibia 25,8 »
» of tarsus and 4th toe 32,5 mm.

By the very small tympanum this species seems to be allied to *Hyla arfakiana* Peters & Doria and possibly to *Hyla parvidens* Peters. But according to the descriptions, the former has »snout acuminate, longer than the diameter of the orbit; canthus rostralis straight, loreal region not very oblique, fingers free, no distinct rudiment of pollex; toes two thirds webbed, skin smooth above etc.» The colour is rather dissimilar as well, and to judge from the figure in *Ann. mus. Civ. Genova*

13, 1878, pl. 6 fig. 2, the disks of the fingers and toes are considerably smaller in *H. arfakiana* than in my specimen. *Hyla parvidens* has vomerine teeth hardly distinguishable, considerably shorter hind limbs, a quite different colour etc.

Hyla serrata n. sp.

(Fig. 6.)

Tongue broad, oval or semicircular, nicked behind. Vomerine teeth in two small oblique groups on the level with the hind edges of the choanæ. Head rather small, as broad as the distance between the tip of the snout and the hind margin of the tympanum. Snout rounded, in the adult distinctly longer than the orbital diameter; canthus rostralis distinct, loreal region high and oblique, not concave. Interorbital space broader than the upper eyelid; tympanum very distinct, small, more than one third, but not half, the diameter of eye. Three outer fingers more than half webbed, the web extending to the disks as broad folds along the distal joints; web distinct between the base of the first and second fingers as well. No distinct rudiment of pollex. Toes nearly entirely webbed, the web does not reach the disk of the fourth toe; an oval inner metatarsal tubercle, no outer; a very distinct, serrated dermal fold along the outer edge of the tarsus and along the outer side of the fore-arm. The disk of the fourth toe about as large as the tympanum, that of the third finger somewhat larger. If the length of the tibia is marked from the knee forwards along the body, it reaches the tip of the snout or somewhat beyond. All upper and lower surfaces coarsely granulate; besides, the upper parts are provided with small scattered tubercles. A distinct fold above the tympanum. Colour in spirit: upper parts rather variable; the largest specimen light grey, indistinctly spotted with black; the smaller specimens either dark olive, uniform or more or less marbled with brownish grey, or reddish brown, marbled with dark olive. Generally, the colour of the limbs resembles that of the body; in one of the small specimens the limbs are considerably lighter, densely and minutely dotted with brown; in two others the hind limbs are provided with two light bars across the thighs and tibiæ. Under surfaces uniform light grey, sometimes the chin and the feet are dusky grey. According to a statement of Dr. MJÖBERG, the colour changes in a very high degree in agreement with the haunts of the animals. Regarding the specimen figured he says: »This specimen resembled completely the branch of the tree, on which it was sitting when caught.»

Six specimens collected during the rainy season (January to May) 1913; two (17,5 and 74 mm.) at Carrington, three (45, 42, 38 mm.) at Malanda and one (43 mm.) at Atherton.

Measurements.

Total length	in mm.	74	45	43	42	38	17,5
Breadth of head	»	28	17	15,6	15	14,2	6,1
Length » » to the hind margin of tympanum	»	25	16	15,5	14,3	14	6,2
Length of snout	»	11,2	7	7	6,2	6,1	2,3
Diameter of eye	»	9	7	6,5	6,1	6	3
» of tympanum	»	4,1	2,9	2,6	2,2	2,1	1
Length of humerus	»	16	9	9,5	9	8	4
From elbow to tip of 3d finger	»	39	24	22	21,5	20,5	8
Length of femur	»	40	25	22,9	23	21	8
» of tibia	»	41	27	23	23,2	21,5	8,8
» of tarsus with 4th toe	»	55	35	30	30	28	11

At a first glance this frog appears to have a great resemblance to *Hyla rhacophorus* from New Guinea, described by KAMPEN in *Resultats de l'Expedit. Sc. Neerl. à la Nouvelle-Guinée*, Vol. 9, Zool. Liv. 1, p. 32, Leiden 1909. The very distinct serrated dermal folds along the fore-arm and hand, and tarsus and foot give the same characteristic appearance to that species as to the one here described. In addition to this *H. rhacophorus* has »auf der Oberseite von Kopf, Rumpf und Extremitäten zerstreute kleine Warzen; etwas grössere Warzen unter dem After (hier z. T. in einer Querreihe angeordnet) und an den Fersen». This description corresponds well with my new species, except that the latter is still more warty than the figure of *H. rhacophorus*. A closer examination of KAMPEN's description and figure clearly proves, however, that my specimens can not be referred to his species, which has a small head (1/3 the length of head and body), canthus rostralis sharp, loreal region deeply concave, interorbital space as broad as the upper eyelid, tympanum 2/3 the eye, considerably larger web on the hand as well as on the foot, disks smaller than the tympanum, upper surface »bläulich violett, Unterseite gelblich», in addition to which »Oberarm und Oberschenkel mit Ausnahme eines schmalen Streifens längs der Oberseite, die drei inneren Finger, der Tarsus und Fuss, das Trommelfell und der Lippenrand» are »gelblichweiss».

By the well developed web on the hand and the small tympanum it also appears to be allied to *Hyla montana* PETERS & DORIA, *H. rüppelli* BOETTGER and *H. mystax* KAMPEN.

H. montana differs in having the skin of the upper parts smooth, the vomerine teeth situated between the choanæ, and, to judge from the figure in *Ann. Mus. Civ. Genova* 13, 1878, pl. 7, f. 1, no fold on the fore limb and only a faint one on the tarsus.

Hyla rüppelli has the upper surfaces smooth, still smaller tympanum and smaller disks (BOETTGER states, that in a specimen 45 mm. in length tympanum is only 2

mm. in diameter, and the breadth of the disk on the third finger only 2,5 mm.; in the specimen 45 mm. of this species tympanum is 2,9 mm., and the disk of third finger 3 mm.).

Hyla mystax KAMPEN (*Resultats de l'Exped. scient. neerlandaise à la Nouvelle-Guinea*, Vol. V, Zoologie, p. 173) has vomerine teeth »in zwei kleinen runden Gruppen in der Mitte zwischen der Choanen, keine Tarsalfalte» and a quite different colour.

Hyla tympanocryptis n. sp.

(Figs. 7 a—e.)

Tongue oval, nicked and free behind. Vomerine teeth in two small transverse groups behind the choanæ. Head about as broad as the distance between the tip of the snout and the angle of the mouth. Snout triangular, acuminate, much longer than the diameter of eye; canthus rostralis very distinct, loreal region high, slightly oblique, not concave; nostril nearer the tip of the snout than the eye; interorbital space broader than the upper eyelid. Tympanum very small, concealed under the skin (hardly distinguishable on the one side). Three outer fingers nearly entirely webbed, a broad fold of the web reaches the disks, except on the inner sides of the third and second fingers; first finger half webbed. No distinct rudiment of pollex; disks of three outer fingers large; the disk of first finger considerably smaller. Toes entirely webbed, an oval inner metatarsal tubercle, no outer; disks smaller than on the fingers. If the length of tibia is marked off from the knee forwards along the body, it reaches the tip of the snout. All upper surfaces finely granulate; the granules porous, the pores especially distinct on the head; under surfaces, except on the tibia and tarsus, coarsely granulate. A fold from the eye to the axil; a narrow, low tarsal fold. Upper surfaces olive, marmorated with light brown. Under parts colourless with a faint tint of reddish yellow, except the sides of the throat and under margins of the thighs, which are blackish.

One specimen from Malanda, Febr. 1913.

Measurements.

Length between tip of snout and vent 47 mm.
Breadth of head 17 mm.
Distance between snout and angle of mouth 16,5 mm.
Length of snout 8 mm.
Diameter of eye 6 mm.
Length of humerus 8 mm.
From elbow to tip of the longest finger 23 mm.

Diameter of disk on 3d finger 2,8 mm.
Length of femur 23 mm.
» of tibia 27 mm.
» of tarsus with 4th toe 36 mm.

By the beautifully chagreened upper surfaces and the well developed web on the hand this species resembles *Hyla gracilenta* PETERS, which species Dr. MJÖBERG collected at Malanda as well, but the specimen now described is easely distinguishable from that species, which has »vomerine teeth in the middle between the choanæ, snout as long as the diameter of the orbit, tympanum about two thirds the diameter of the eye» etc. The colour is quite different as well, and the tympanum not concealed under the skin, at least in the specimens in this collection. By this latter character this new species appears to differ from the most Australian species of the genus *Hyla*. *Hyla maculata* from Victoria, described by SPENCER in *Proc. R. Soc. Vict.* (2) 13, p. 177, 1900, is stated to have this same structure of the tympanum, but it differs by very slightly webbed fingers, shorters limbs etc.

Hylella bicolor GREY. — Seven specimens from Alice River, one specimen from Cape York, Sept. 1913, 18—22 mm. All specimens lack vomerine teeth. According to Dr. MJÖBERG they were very common in the Pandanus-trees, where they used to sit, having crawled up into the interspaces of the sheaths of the leaves.

Explanation of the Plate.

Fig. 1. *Phrynixalus reginæ* n. sp.; *a*—*c* different colour-patterns of specimens in nat. size, *d* mouth open. 3/1.
» 2. *Crinia acutirostris* n. sp. 1/1.
» 3. *Phanerotis fletcheri* BLGR. *a* a specimen from New Guinea, belonging to the collections of the Zoological Museum in Wiesbaden, 1/1, *b* sternal apparatus, *c* tongue.
» 4. *Pseudophryne rugosa* n. sp. 1/1. A sketch showing the large glands.
» 5 a—e. *Hyla nannotis* n. sp. *a* head and anterior part of body, *b* side of head, *c* vomerine teeth, *d* hand, *e* foot (all figures in nat. size).
» 6. *Hyla serrata* n. sp. 1/1.
» 7 a—e. *Hyla tympanocryptis* n. sp. *a* head and anterior part of body, *b* side of head, *c* vomerine teeth, *d* hand, *e* foot (all figures in nat. size).

Tryckt den 30 mars 1916.

Uppsala 1916. Almqvist & Wiksells Boktryckeri-A.-B

1 a

1 b

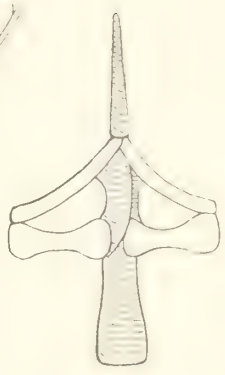
1 c

1 d

2

3 a

3 c



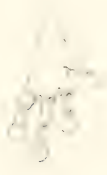
3 b

4

5 a

5 b

5 c



5 d

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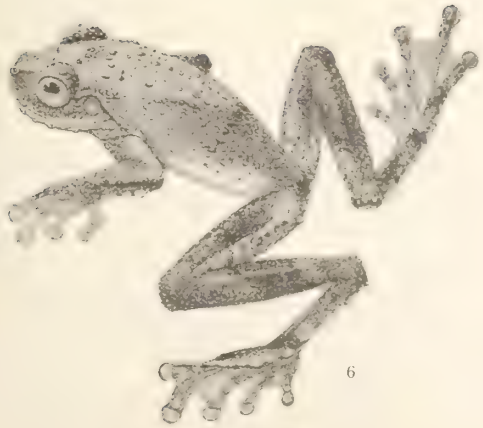

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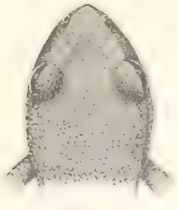
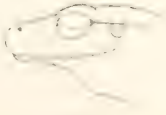


7 a



7 b

7 c

7 d

7 e

Cederquists Graf. A.-B., Sthlm.